

Original Paper

Measurement Accuracy of Secondary Standards of Sound Pressure in Comparison to Primary Standards

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Abstract

The paper presents the measurement uncertainty achieved in realizing the primary standard of sound pressure at NPL, India and comparison of the uncertainties of secondary calibrations with that of primary standard. The uncertainty associated with calibration of acoustic calibrators, working standard microphones and sound pressure level measurements is discussed. A comparison of the actuator response with that taken from reciprocity setup for working standard microphones is also presented. The major focus of the present work is to highlight the traceability chain established in measurement of sound pressure level and propagation of measurement uncertainties directly from the national primary standard to field measurements, which are very rigorously conducted in transportation noise monitoring, machinery noise diagnostics, noise labeling of electrical appliances and environmental impact assessment studies w.r.t noise abatement and control.

Keywords

LS1P & LS2P microphones – Reciprocity method – Working standard microphones – Measurement uncertainty – Sound pressure level (SPL)